

**FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST6091**  
**LAKE QUINAULT WASTEWATER TREATMENT PLANT**

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**INTRODUCTION**

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST6091 . The Department of Ecology (Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the state of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law [Revised Code of Washington (RCW) 90.48.080 and 90.48.162] requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the State include procedures for issuing permits [Chapter 173-216 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC) and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish the basis for effluent limitations and other requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Department and by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

<b>GENERAL INFORMATION</b>	
Applicant	U.S. Dept of Agriculture, Forest Service, Quinault Work Center
Facility Name and Address	Lake Quinault Wastewater Treatment Plant
Type of Treatment System:	Interim: Activated Sludge & discharge to land; Final: Activated Sludge with Membrane Bio-Reactor (MBR) & discharge to land.
Discharge Location	Latitude: 47° 28' 16" N      Longitude: 123° 50' 37" W.
Legal Description of Application Area	A schematic of the drainfields as originally proposed may be found in Appendix C. Approximate Location of the upper Drainfield Zone A is at: Latitude: 47° 28' 16" N. Longitude: 123° 50' 33" W.
Contact at Facility	Keith E. Magoon, Operator (360) 288-0287
Responsible Official	Dennis Schneider, Civil Engineer, USDA, Forest Service 1835 Black Lake Boulevard SW, Suite A (360) 956-2274 FAX # (360) 956-2330

## **BACKGROUND INFORMATION**

### *DESCRIPTION OF THE COLLECTION AND TREATMENT SYSTEM*

#### **HISTORY**

The existing facility was constructed in 1974 to serve the Lake Quinault Lodge, Forest Service Facilities, and several cabins on the south shore of the lake. There are, however, many cabins on the south shore that still have on-site septic systems. The aging Lake Quinault sewage treatment facility uses the activated sludge process in concrete basins under roof with open sides. There are integral rectangular secondary clarifiers attached to the aeration basins by a common wall. The facility discharges by gravity to a 1.5 acre drainfield. The facility has a peak day design capacity of 30,000 gpd. This facility is located approximately 1,300 feet from the shores of Lake Quinault and approximately 100 feet above the lake surface. The facility elevation is at approximately 280 feet above mean sea level.

In the last five years the forest service has decided to seek permitting of the facility from the State. Because the facility has reached its capacity and is nearing the end of its working lifespan, the Forest Service has also decided upgrade the facility. Therefore, in 1999 the Quinault Ranger Station issued a pre-design report for the Lake Quinault Treatment Facilities (G&O, 1999). This report examined the alternatives for upgrading the wastewater treatment plant, the expansion of the drainfield and its geotechnical evaluation, and the expansion of the collection system to include most of the cabins along the south shore.

The chosen alternative (Alternative No. 3) is activated sludge treatment with nitrogen removal and membrane filtration. Upgrading the facility will include removal of some of the equipment, but also will be using the existing tanks and covered structure, which includes a laboratory and office.

#### **COLLECTION SYSTEM STATUS**

The existing collection system is approximately 15,000 lineal feet with a combination of grinder pumps with pressure lines and gravity flow to two pump stations. There are currently two pump stations. Pump station No. 1 collects all of the waste water to pump up to the sewage treatment works. The existing pipe materials consist of galvanized iron, ductile iron, cast iron, concrete, and PVC.

The proposed collection system improvements will extend from Quinault Fish Hatchery in the west, to the Rainforest Resort to the east and connecting all the private residences and cabins along the way. It appears that the Rainforest resort will not be hooked up the sewer system at this time. A low pressure grinder pump system is recommended for the expansion of the collection system which would pump into the mainline collection sewer. The sewer line extensions would be 3 or 4-inch PVC or HDPE pipe.

It does not appear that Infiltration and Inflow (I/I) has been examined in the past. However, with a low pressure sewer system proposed, and new pipe, the I/I should be minimal within the main collection lines. There could still be I/I within the laterals to existing residences and at the grinder pumps. An I/I program will be a requirement of the permit.

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TREATMENT PROCESSES

Existing (Interim) Treatment Works:

The wastewater from the existing pump station enters the treatment plant at the headworks where there is bar screen and a Hycor helical-style of fine-screen. The flow is then split to two aeration basins that are aerated with floating aerators. Flow is passed to two attached rectangular clarifiers with hopper bottoms. The clarified effluent is sent to a channel with a 22 ½° V-notch weir for flow measurement. The effluent is pumped to the drainfield without disinfection.

The existing facility is classified as a Class II facility which requires an operator with a Group II certification. At the present time there is one part-time operator with a Group II certification and another operator with an operator in training certificate. The plant is staffed from 7:00 a.m. to 2:30 p.m. daily Monday through Friday and two hours on the weekends.

Proposed (Final) Treatment Works:

The flow from the collection system is to be metered and monitored with a 24-hour sampler prior to being screened with the Hycor helical-style of fine-screen. With Membrane Bio-Reactors (MBRs) it is recommended that complete and redundant screening take place to protect the MBRs.

The flow is split to the two aeration basins which will have selectors and anoxic basins at the influent end to provide nitrogen removal. The main aeration basins will have fine bubble diffusers to provide oxygen and aid in scrubbing (anti-fouling) of the MBRs. However, cleaning of the MBRs is accomplished by short (15 to 30 second) frequent backpulsing with a chlorine solution. Every few hours a longer and stronger chlorine solution is backpulsed through the membranes. The backpulsing will be automatically controlled and adjusted as needed. The proposal is to use a standard sodium hypochlorite concentration of 10 to 12 percent. The chlorine concentration would vary from 2 to 10 mg/L for the frequent backpulsing to 200 to 300 mg/L for the more intensive cleaning. In the event that a more intense cleaning is needed, dip tanks with a dilute acid solution will be provided in the aeration tank. At the time of the writing of this Fact Sheet, the proposal was to use Zenon Corporation hollow tube microfilters. These filters are in multiple strand bundles. After the MBRs, the filtered effluent flow is monitored by a magnetic meter. There is another 24-hour effluent sampler prior to a wet well where the effluent is pumped to the drainfields.

The new MBR system is expected to be constructed in 2006.

There are no industrial customers in the service area. The wastewater is municipal in nature; however, there is the resort with a restaurant and café which produce fats, oils and grease. It is important that grease traps be functional and maintains to protect both the membrane filters and the drainfield from failure. It was noted in an inspection on June 7, 2005, that there were large patches (6 to 12-inches) of grease floating over the clarifier weirs.

The facility is currently owned and operated by USDA Forest Service. The Lake Quinault Lodge, which is run by a private corporation, may take over the operation of the new plant.

The following table shows the flows and loadings. It is assumed that the facility at this time will be built without the excess capacity in order to accommodate the Rainforest resort.

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**Table 1: WWTP Design Flows and Loadings**

	Without Rainforest Resort
Annual Average Flow (gpd)	24,000
Max Month Flow (gpd)	40,000
Peak Day Flow (gpd)	80,000
BOD Annual Average (lbs/d)	75
BOD Maximum Month (lbs/d)	130
TSS Annual Average (lbs/d)	100
TSS Maximum Month (lbs/d)	180
Nitrogen Annual Avg Day (lbs/d)	15
Nitrogen Maximum Month (lbs/d)	20

The design flows and a loadings are used to set loading limits which will be shown in subsequent sections.

**DRAINFIELD DISTRIBUTION SYSTEM**

In 2005 the drainfield was expanded from 1.5 to 5.4 acres with five distribution zones (Zones A through E). The land where the drainfields are located is owned and managed by the USDA Forest Service. A schematic/map of the drainfields may be found in Appendix C.

**Table 2: Ground Water Analytical Results—August 13, 1998 (all values in mg/L unless specified) From G&O, 1999**

Parameter	MW-1	MW-2	MW-3	Ground Water Quality Criteria
Top of casing elevation	276.68	278.96	287.03	
Depth to ground water	43.75	41.28	40.46	
Ground water elevation	232.93	237.68	246.57	
Nitrate	5.40	5.00	0.100	10
TKN	<1.0	<1.0	<1.0	
Ammonia	<0.1	<0.1	<0.1	
Phosphorus	0.327	0.0171	0.121	
BOD	1.53	<1.0	<1.0	
TDS	200	120	42	500

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Parameter	MW-1	MW-2	MW-3	Ground Water Quality Criteria
TSS	33	<5.0	31	
Coliform (cfu/100 ml)	<1.0	>1.0	<1.0	1
E. Coli (cfu/100 ml)	<1.0	<1.0	<1.0	
Calcium	29.4	16.0	6.21	
Potassium	0.599	0.372	0.568	
Sodium	8.48	9.38	2.66	
Bicarbonate Alkalinity	85.8	37.1	15.8	
Carbonate Alkalinity	<5.0	<5.0	<5.0	
Hydroxide Alkalinity	<5.0	<5.0	<5.0	
Chloride	15.5	9.01	1.53	250
Sulfate	1.25	1.60	0.36	250
Total Fe	7.13	0.537	6.63	
Total Mn	0.483	0.0521	0.141	
Dissolved Fe	5.89	0.161	<0.15	0.3
Dissolved Mn	0.476	0.0492	0.00985	0.05
pH	6.0	4.9	6.9	6.5-8.5
Conductivity (µS)	295	110	42.6	
Dissolved Oxygen	0.22	5.81	8.78	
Temperature (°C)	13.5	11.6	13.4	

- Drainfield A 0.97 acres
- Drainfield B 1.22 acres (original drainfield)
- Drainfield C 1.02 acres
- Drainfield D 1.1 acres
- Drainfield E 1.1 acres

With the five drainfield distribution zones the effluent should be rotated to each zone on a five-day cycle.

#### RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the aeration/membrane basin, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local solid waste transfer station.

Solids removed from the aeration basin are currently stored and hauled away to be land applied by Biorecycling in Shelton, Washington. However, the facility does not currently have a biosolids handling

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permit. A permit is required by the state Department of Ecology, which is administered by the Solid Waste program. Biosolids and sludge waste is regulated by U.S. EPA under 40 CFR 503, and by the Department under Chapter 70.95J RCW and Chapter 173-308 WAC. The biosolids permit is not covered under this state waste discharge permit. It is only discussed here to ensure that the Permittee knows that they are required to apply for the permit.

*GROUND WATER*

Two geologic deposits outcrop in the area between the drainfield and the lake: unconsolidated glacial sediments and older (Oligocene-Miocene) fine-grained marine sediments. (Washington State Department of Natural Resources 1:100,000 Digital Geologic Map, Olympic Quadrangle.) The glacial deposits where saturated represent the uppermost aquifer in the area. The hydrogeology of the drainfield area is described in the 1998 report Quinault Ranger Station Wastewater Treatment Plant Hydrogeologic Investigation Quinault, Washington by HWA Geosciences Inc. The investigation included test pits, soil borings, three monitoring wells (MW1, MW2, and MW3), aquifer testing, groundwater sampling and a mass-balance nitrate loading model. The results of this investigation showed that the uppermost aquifer consists of sand and sandy gravel. The aquifer is unconfined and the depth to groundwater is about 40 feet below the ground surface. The aquifer thickness ranges from 6 to 13 feet. The hydraulic conductivity of the aquifer was estimated to range for 5 to 19 feet/day based on short-term pumping tests at MW2 and MW3. The average groundwater flow velocity was estimated to range from about 1 to 5 feet/day.

At some later time five additional monitoring wells (MW4 through MW8) were installed at the drainfields.

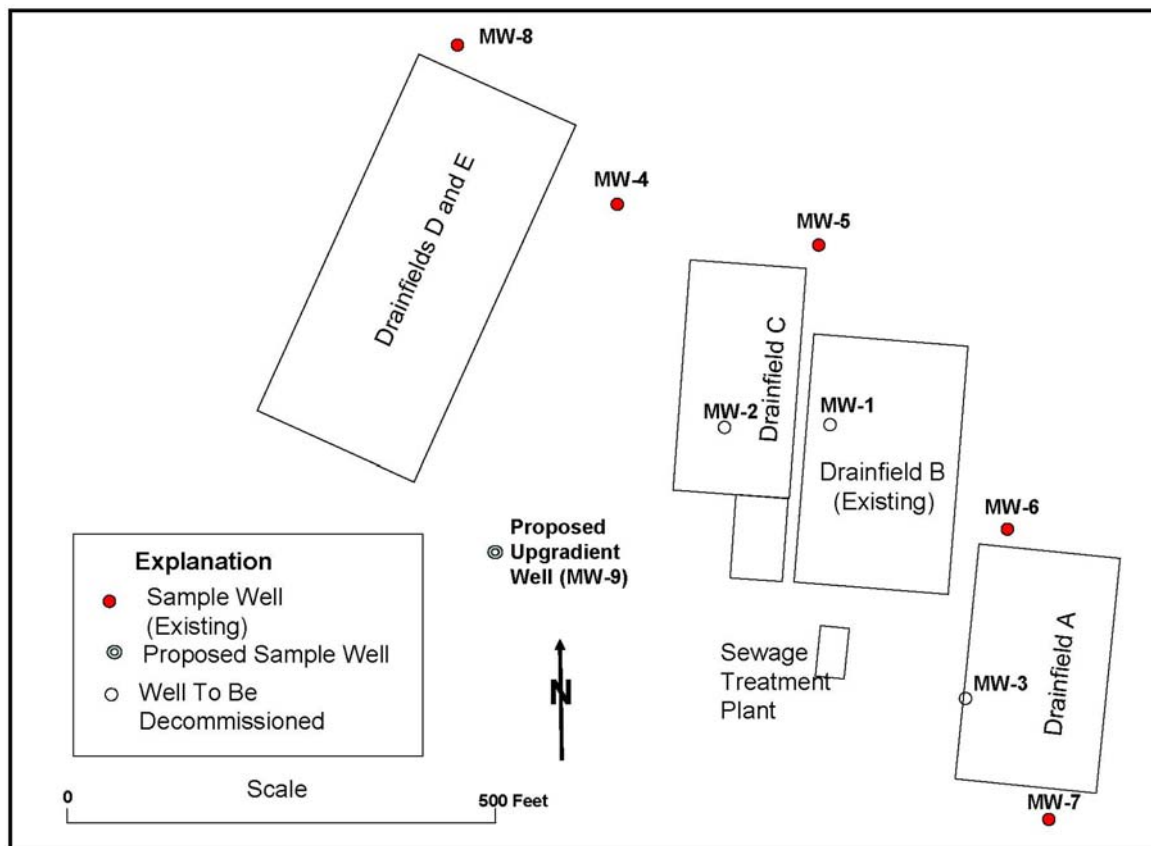
The groundwater monitoring network is shown in Figure 1. It will consist of six monitoring wells: two upgradient (MW7 and MW9) and four downgradient (MW4, MW5, MW6, and MW8). MW9 will be installed as a requirement of this permit. Wells MW1 through MW3 will be properly decommissioned so as not to represent a potential contaminant pathway to the aquifer.

Based on water levels obtained from the monitoring network by the National Forest Service in November 2005 and January 2006, groundwater beneath the drainfield is flowing to the north and northeast. The hydraulic gradient ranged from 0.044 to 0.054 (ft/ft).

The water quality results for samples obtained from wells MW1, MW2, and MW3 on August 13, 1998, are shown in Table 2. MW3 was the upgradient well at that time. The results for nitrate, phosphorus, dissolved iron and other parameters appear to be elevated in downgradient wells. This data suggests that the facility was affecting groundwater quality. This issue was recognized and the engineering report recommended that the facility have nitrogen removal. The size of the drainfield was also increased to its present size of 5.4 acres to reduce the effect of the discharge on groundwater quality.



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**Figure 1. Monitoring Well Locations, Lake Quinault Sewage Treatment Plant.**

## PERMIT STATUS

This is a new permit for an old facility that has previously operated without a permit on National Forest lands. The facility serves National Forest buildings, tribal lands and private holdings.

An application for a permit was originally submitted to the Department on August 24, 2000. However, many changes have since been made to the original plans and a new facility “Plans and Specifications” document with drawings was received on October 2004.

## SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility last received an inspection on June 7, 2005, in order to evaluate the facility prior to permitting and to examine the new drainfields in development.

Because the facility was not permitted, there have been few records kept or available to evaluate past performance. However, because the facility is undergoing a complete retrofit with membrane filtration, the past performance will be overshadowed by the new equipment. The facility flows and loadings have been examined and analyzed in the 1999 facility plan in order to redesign the facility.

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**WASTEWATER CHARACTERIZATION**

Currently only pH has been monitored in the effluent. The monitoring of effluent and ground water in monitoring wells will be a requirement in the new permit. This monitoring will be true for both the existing facility (before the new facility is built and operating) as well as the new facility.

**SEPA COMPLIANCE**

The U.S.D.A. Forest Service examined the need for State Environmental Policy Act (SEPA) and determined the following: Because of the location of this facility on National Forest Lands next to Quinault tribal lands, no SEPA approval or notification is required by the U.S.D.A. Forest Service. No shoreline permits are required in this area. No wetlands appear to be involved and no hydraulic Project approval (HPA) will be required as all stream crossings will be above existing culverts. No Air emissions permit is required because the facility is under 1 MGD. No Utility franchise from the county is required because all property is owned by the Federal Government. There is no FEMA flood plain restrictions for the project area. Endangered Species Act (ESA) issues have been addressed in previously completed Environmental Assessment and Decision Notices and findings of “No Significant Impact” were found.

**PROPOSED PERMIT LIMITATIONS**

State regulations require that limitations set forth in a waste discharge permit must be either technology- or water quality-based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard are derived from the *Water Reclamation and Reuse Standards*, the *Design Criteria for Municipal Wastewater Land Treatment*, and Chapter 173-221 WAC.

The permit also includes limitations on the quantity and quality of the wastewater applied to the drainfield that have been determined to protect the quality of the ground water. The approved engineering report includes specific design criteria for this facility. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

**TECHNOLOGY-BASED EFFLUENT LIMITATIONS**

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART:

Table 3: Technology Based Limits

Parameter	Monthly Average	Weekly Average
BOD <sub>5</sub>	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
pH	Shall not be outside the range of 6 to 9 standard units	

The total BOD and TSS monthly effluent loadings (lbs/day) are calculated as the maximum monthly design flow (0.04 mgd) x concentration limit (30 mg/L) x 8.34 (conversion factor) = mass limit 10.0 lbs/day.

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The weekly average effluent mass loading for BOD and TSS is calculated as 1.5 x monthly loading (10 lbs/day) = 15 lbs/day.

The existing and new facility configurations will also be required to have loading limits for BOD and TSS based on the flow and the technology based limits from table 3 above. The loading limit for the existing facility are:

$$\text{Monthly} = 0.03 \text{ mgd} \times 30 \text{ mg/L} \times 8.34 = 7.5 \text{ lbs/day}$$

$$\text{Weekly} = 1.5 \times 7.5 = 11 \text{ lbs/day}$$

The final loading limits for the new facility are calculated as:

$$\text{Monthly} = 0.04 \text{ mgd} \times 30 \text{ mg/L} \times 8.34 = 10 \text{ lbs/day}$$

$$\text{Weekly} = 1.5 \times 10 = 15 \text{ lbs/day}$$

*GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS*

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. Drinking water is the beneficial use generally requiring the highest quality of ground water. Providing protection to the level of drinking water standards will protect a great variety of existing and future beneficial uses.

Applicable ground water criteria as defined in Chapter 173-200 WAC and in RCW 90.48.520 for this discharge include the following:

**Table 4: Ground Water Quality Criteria**

Total Coliform Bacteria	1 Colony/ 100 ml
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Nitrate	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The Department has reviewed existing records and is unable to determine if background ground water quality is either higher or lower than the criteria given in Chapter 173-200 WAC; therefore, the Department will use the criteria expressed in the regulation in the proposed permit. The discharges authorized by this proposed permit are not expected to interfere with beneficial uses. Most of the parameters were well below the criteria; however, the upgradient well has only been monitored once as of this writing. The wells will need to be monitored regularly and lower limits could be set according to the antidegradation policy and background conditions. It does, however, appear that iron and manganese are

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well above the ground water criteria in all of the wells. Therefore, the drinking water criteria for these metals will not be used as limits.

Pollutant concentrations in the proposed discharge exceed ground water quality criteria with technology-based controls which the Department has determined to be AKART. A limit based on ground water criteria is established and applied at the end of treatment.

The 1999 facility plan stated that with the MBRs, the plant should be able to meet a total nitrogen of 10 mg/L or less which is considered as meeting All Known and Reasonable Technology (AKART). The weekly total nitrogen limit was calculated as 1.5 times the monthly limit which was:

$$\text{Monthly} = 0.04 \text{ mgd} \times 10 \text{ mg/l} \times 8.34 = 3.3 \text{ lbs/d TN}$$

$$\text{Weekly} = 1.5 \times 3.3 \text{ lbs/day} = 5.0 \text{ lbs/day}$$

The resultant effluent limits were as follows:

**Table 5: Effluent Limitations**

Parameter	Monthly Average	Weekly Average
BOD <sub>5</sub>	30 mg/L, 10 lbs/day	45 mg/L, 15 lbs/day
TSS	30 mg/L, 10 lbs/day	45 mg/L, 15 lbs/day
Total Nitrogen	10 mg/L, 3.3 lbs/day	15 mg/L, 5 lbs/day
pH	Shall not be outside the range of 6 to 9 standard units	

The above limits will be used in the permit to control the effluent as it leaves the plant. These limits are based on the technology limits for domestic wastewater facilities.

**Table 6: Ground Water Limitations**

Parameter	Ground Water Enforcement Limit
Total Coliform Bacteria	1 cfu/100 ml
Total Nitrogen <sup>1</sup>	10 mg/L
TKN	10 mg/L
Nitrate	10 mg/L
Nitrite	1 mg/L
Ammonia-N	10 mg/L
Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Sulfate	250 mg/L
Toxics	No toxics in toxic amounts
<sup>1</sup> Total Nitrogen = TKN + Nitrate + Nitrite	

The ground water limits shown above in Table 6 are recommended for the permit. The compliance point for these limits would be the downgradient monitoring wells as specified in the permit.

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Because the upgradient background data were limited, the Permittee will be required in section S2 of the proposed permit to collect background concentrations near the point of discharge. This information may result in a permit modification or limits in the next renewal.

**MONITORING REQUIREMENTS**

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

*INFLUENT AND EFFLUENT MONITORING*

The monitoring and testing schedule is detailed in the proposed permit under Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

*GROUND WATER MONITORING*

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. The Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation.

**OTHER PERMIT CONDITIONS**

*REPORTING AND RECORDKEEPING*

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

*FACILITY LOADING*

The design criteria for the new treatment facility are taken from the October 2004 Plans and Specification (engineering drawings) prepared by Curran-McLeod Inc. for the U.S.D.A. Forest Service and are as follows:

Monthly average flow (max. month):	40,000 gpd
Instantaneous peak flow (day):	80,000 gpd
BOD influent loading (max month):	130 lbs/day
TSS influent loading (max month):	180 lbs/day

The permit requires the Permittee to maintain adequate capacity to treat the flows and waste loading to the treatment plant [WAC 173-216-11094]. The Permittee is required to submit an engineering report when the plant reaches 85 percent of its flow or loading capacity. For significant new discharges, the permit requires a new application and an engineering report [WAC 173-216-11(95)].

*OPERATIONS AND MAINTENANCE*

The proposed permit contains condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular

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maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment. Because the facility is being upgraded, a new Operations and Maintenance (O & M) Manual will be required upon the Department's receipt of the letter of completion of construction. The new O & M Manual will therefore contain information on maintaining and operating the new equipment.

*RESIDUAL SOLIDS HANDLING*

To prevent water pollution the Permittee is required in permit condition S6 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503 and by the Department under Chapter 70.95J RCW and Chapter 173-208 WAC. The disposal of other solid waste is under the jurisdiction of the local health district.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will be used by the Department to develop or update local limits and is also required under 40 CFR 503. This includes facilities, such as the Lake Quinault facility, that are having their waste hauled off-site.

*PRETREATMENT*

WAC 173-216-110 requires that the list of prohibitions in WAC 173-216-060 be included in the permit.

Federal pretreatment requirements in 40 CFR 403 and Sections 307(b) and 308 of the Clean Water Act apply to this facility. Therefore notification to the Department is required when pretreatment prohibitions are violated and when new sources of commercial or industrial wastewater discharge are added to its system.

*GENERAL CONDITIONS*

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to submit written notice of significant increases in the amount or nature of discharges (typically new industrial discharges) into the sewer system tributary to the permitted facility. Condition G6 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G7 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Condition G8 requires the payment of permit fees. Condition G9 describes the penalties for violating permit conditions.

**RECOMMENDATION FOR PERMIT ISSUANCE**

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the state of Washington. The Department proposes that the permit be issued for five years.

*FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST6091  
LAKE QUINAULT WASTEWATER TREATMENT PLANT*

**REFERENCES FOR TEXT AND APPENDICES**

- Curran-McLeod, Inc, Consulting Engineers, 2004. Quinault Work Station, Wastewater Collection, Treatment Facility and Pump Station Improvements, Volume One: Civil & Mechanical Improvements. Portland, Oregon. Job No. 1408
- Faulkner, S.P., Patrick Jr., W.H., Gambrell, R.P., May-June, 1989. Field Techniques for Measuring Wetland Soil Parameters, Soil Science Society of America Journal, Vol. 53, No.3.
- Gray & Osborne, Inc. (G&O), 1999. Lake Quinault Wastewater Treatment Facilities Upgrade and Expansion Pre-Design Report-Quinault Ranger Station. Seattle, WA G&O No. 98609
- Washington State Department of Ecology, 1993. Guidelines for Preparation of Engineering Reports for Industrial Wastewater Land Application Systems, Ecology Publication # 93-36. 20 pp.
- Washington State Department of Ecology and Department of Health, 1997. Water Reclamation and Reuse Standards, Ecology Publication # 97-23. 73 pp.
- Washington State Department of Ecology.
- Laws and Regulations( <http://www.ecy.wa.gov/laws-rules/index.html> )
- Permit and Wastewater Related Information  
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html> )
- Washington State Department of Ecology, 1996. Implementation Guidance for the Ground Water Quality Standards, Ecology Publication # 96-02.
- Washington State University, November, 1981. Laboratory Procedures - Soil Testing Laboratory. 38 pp.

## **APPENDICES**

### *APPENDIX A--PUBLIC INVOLVEMENT INFORMATION*

The Department has tentatively determined to issue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on June 19, 2005, and June 26, 2005, in the *Aberdeen Daily World* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on May 22, 2006, in the *Aberdeen Daily World* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Carey Cholski  
Water Quality Permit Administrator  
Department of Ecology  
Southwest Regional Office  
P.O. Box 47775  
Olympia, WA 98504

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone (360) 407-6554, or by writing to the address listed above.

This permit was written by Eric Schlorff.



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*APPENDIX B--GLOSSARY*

**Ambient Water Quality**--The existing environmental condition of the water in a receiving water body.

**Ammonia**--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

**Average Monthly Discharge Limitation**--The average of the measured values obtained over a calendar month's time.

**Best Management Practices (BMPs)**--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

**BOD<sub>5</sub>**--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD<sub>5</sub> is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

**Bypass**--The intentional diversion of waste streams from any portion of the collection or treatment facility.

**Chlorine**--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

**Compliance Inspection - Without Sampling**--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

**Compliance Inspection - With Sampling**--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

**Composite Sample**--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

**Construction Activity**--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

**Continuous Monitoring** --Uninterrupted, unless otherwise noted in the permit.

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**Distribution Uniformity**--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

**Engineering Report**--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

**Fecal Coliform Bacteria**--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

**Grab Sample**--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

**Industrial Wastewater**--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

**Maximum Daily Discharge Limitation**--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

**Method Detection Level (MDL)**--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

**pH**--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

**Quantitation Level (QL)**-- A calculated value five times the MDL (method detection level).

**Soil Scientist**--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

**State Waters**--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

**Stormwater**--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

**Technology-based Effluent Limit**--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

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**Total Coliform Bacteria**--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

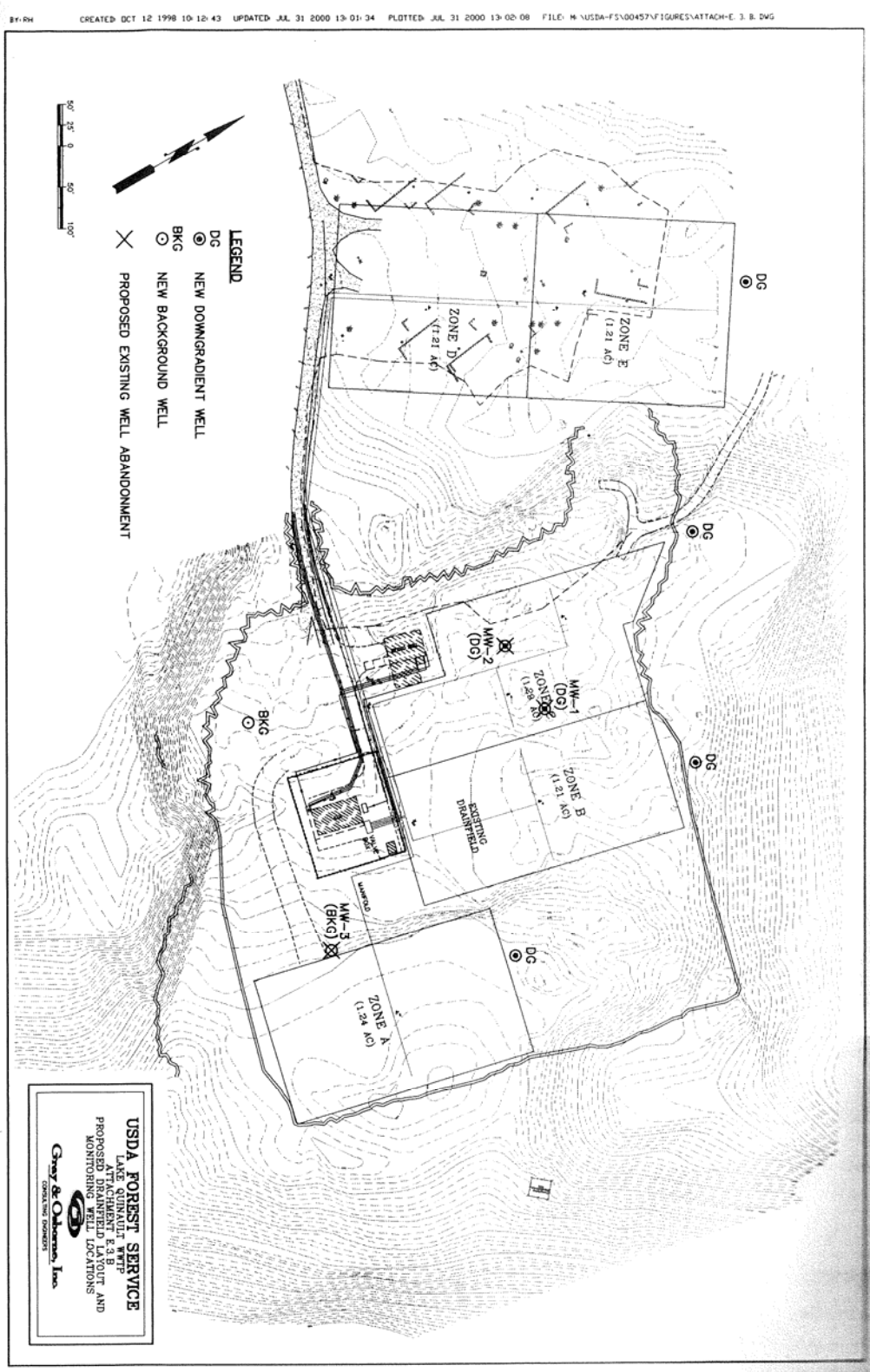
**Total Dissolved Solids**--That portion of total solids in water or wastewater that passes through a specific filter.

**Total Suspended Solids (TSS)**--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

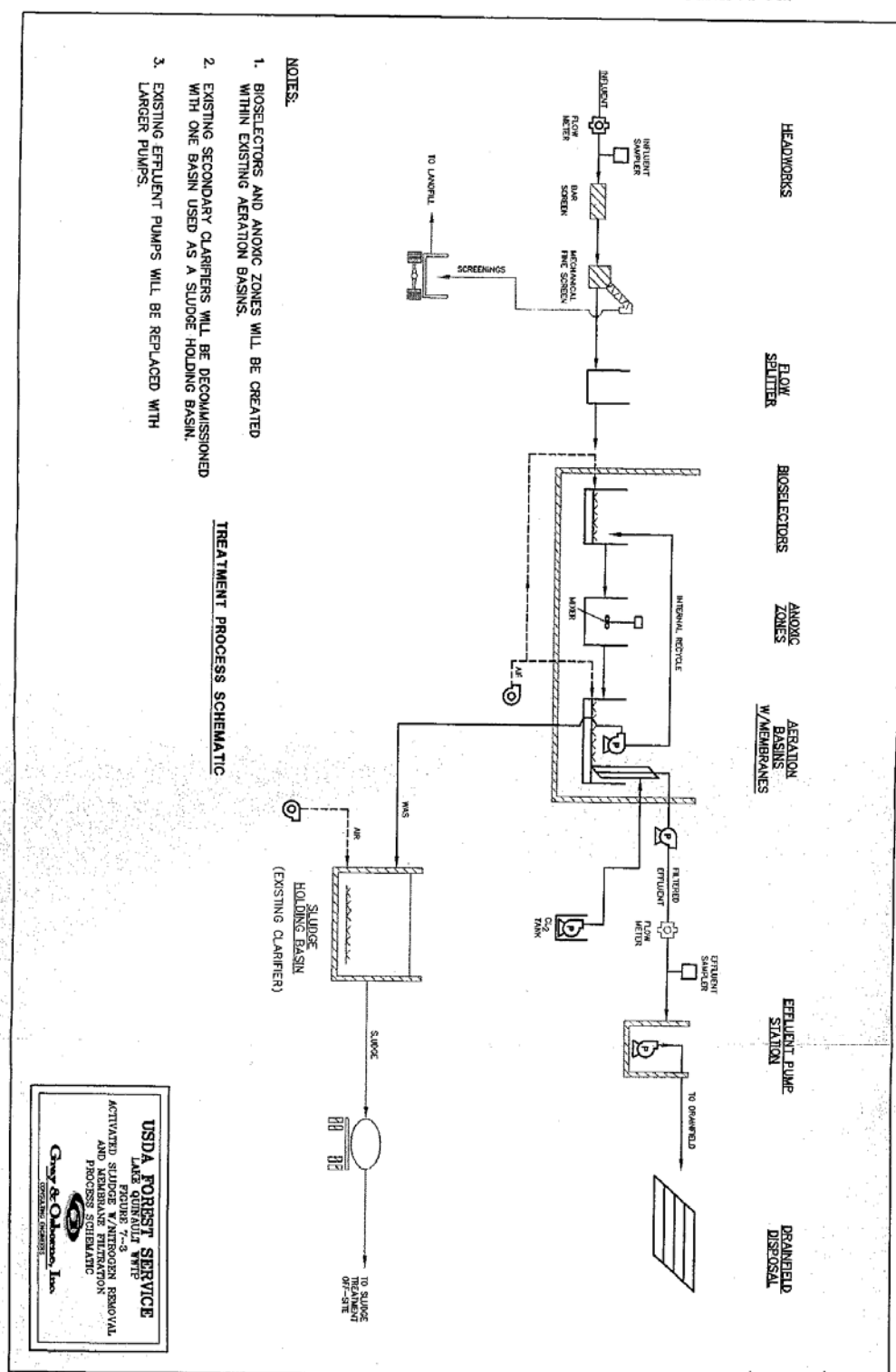
**Water Quality-based Effluent Limit**--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

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APPENDIX C--TECHNICAL DRAWINGS



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*APPENDIX D--RESPONSE TO COMMENTS*

No comments were received.